



The Effect of SSBM Massage on Anxiety and Fatigue of Patients with Multiple Sclerosis

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ABSTRACT

Multiple sclerosis (MS) is one of the most prevalent chronic diseases of central nervous system. Chronic nature of disease, indefinite prognosis and treatment and its early onset are the features that lead to variety of physical and psychological disorders. Anxiety and fatigue are the more prevalent disorders, experienced by these patients. This study aimed to investigate the effect of SSBM massage on anxiety and fatigue of patients with multiple sclerosis. In a quasi-experimental study, 62 patients were selected from the patients registered in MS Association of Qazvin, Iran. Participants were randomly allocated to study and control groups. Every patient received SSBM massage in seven sessions of ten minutes. Data were collected using three questionnaires of demographic variables, fatigue severity scale and Spielberger Anxiety questionnaire. Anxiety and fatigue were assessed before and 24 hours after the last session of SSBM massage. Descriptive and inferential statistics (independent and paired T-test) were used to analysis the data. P value of 0.05 was considered significant. Mean scores of fatigue severity were not significantly different before intervention in study and control groups (48.3 vs. 48.86). In addition, anxiety scores were not significantly different before intervention in study and control groups (51.53 vs. 51.63). After intervention, fatigue severity and anxiety scores were significantly different in two groups. Mean scores of fatigue severity were 33.12 and 53.20 for study and control groups respectively ($p < 0.001$), and anxiety scores were 38.65 and 52.13 in study and control groups respectively ($p < 0.001$). According to the present study, SSBM massage as a non-invasive, complementary procedure could be an effective intervention to reduce fatigue and anxiety in patients with multiple sclerosis.

KEY WORDS: Complementary medicine, SSBM Massage, Anxiety, Fatigue, Multiple sclerosis.

INTRODUCTION

Multiple sclerosis (MS) is a progressive chronic disease of central nervous system with different and disabling physical and psychological signs[1]. This disease is unpredictable and one of the most important diseases, which changes individuals' life as it targets the best period of their life and gradually leads to disability with no absolute treatment[2]. The most common age of disease onset is 20-40 years. Multiple sclerosis ruins the reproductive forces of a society and endangers all the population[3].

American Multiple Sclerosis Association reported that about 2.5 million people suffer from MS in the world in 2010 and each week, 200 new cases are added to them, and 80% of the patients suffer

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from a degree of disability[4]. Based on Iranian Multiple Sclerosis Association, it is estimated that about 40,000 patients suffer from MS in Iran[5].

Its mortality has increased by 25% in the past two decades in the US. Therefore, with regard to rapid increase of the disease prevalence, high mortality, high costs of treatment, and frequent and various problems of these patients, paying more attention, taking care of these patients and reduction of their problems and the disease signs are essential[6].

Over 90% of the patients with MS experience fatigue and 50-60% claim that it is the worst sign of the disease, which affects the level of their activity, daily function and quality of life[7]. Research showed that fatigue as one of the most common signs of MS reduces the level of patients' daily activities and quality of life [8, 9]. In fact, the fatigue resulted from MS is a common abnormal loss of energy that significantly restrict patients' physical and mental ability regardless of their level of neurological disability[10]. Fatigue affects their cognitive and motor ability and is manifested as reduction of energy, feeling of not well- being, poor motor ability and impaired balance[11].

With regard to its chronic nature and its poor prognosis, this disease leads to signs of mood disorders in such a way that, based on research, the patients develop much higher levels of psychological disorders such as anxiety[12]. These signs may be resulted from the direct effect of inflammation and nerves sheath demyelination or the psychological effect of its chronic unpredictable nature of MS[13].

About 48% of the patients experience signs of anxiety during the first year of diagnosis, which severely affects their quality of life[14]. Meanwhile, 50% of psychological signs are not diagnosed by neurological and routine tests[15].

Although fatigue and anxiety can be managed by medication, their accurate diagnosis and efficient treatment is difficult due to numerous reasons. They include mental and non- specific nature of fatigue, its various manifestations and its similarity with psychological, motor and cognitive disorders and the situations independent of MS as well as noovert etiology of fatigue and anxiety[6, 16]. On the other hand, medication has side effects and numerous problems such nausea, vomiting, spasticity and headache. With regard to the problems and side effects of medication, application of non- meditational methods to lower MS patients' fatigue and anxiety seems logical[6]. In recent years, non- medical methods, known as complementary treatments, have attracted all patients including MS patients.

Complementary treatments have a holistic nature and are applied for patients' physical and mental peace[17]. Non – medical treatments such as sports, massage therapy, and aromatherapy have been reported very helpful in treatment of fatigue and anxiety [18]. Complementary treatments have several benefits for MS patients and are vastly used by them [19, 20]. Research showed that about one third of MS patients benefit from complementary treatment in addition to common and routine treatments. Acceptability of complementary treatments in health system has increased and application of non- medical interventions is spreading among clinical nurses[21]. Complementary treatments can slow down the trend and progression of MS and reduce the number of disease attacks and onset of long life disability[20].

Massage therapy is one of the most common and low risk complementary treatments in the world. It is a healing beneficial and efficient art in nursing profession which is convenient, low risk, non – invasive and relatively cost effective [22]. Massages are in various types. Slow Stroke Back Massage (SSBM), introduced by Elizabeth in 1996, is one of these types. It is conducted through gentle and synchronized movements of the palms on patients' back with a steady speed (about 60 movements per minute) with a mild pressure for 3-10 minutes. The movements, adopted in this type of massage, are superficial stroke, which have only sensory effect and are effective on patients' relaxation [23].

Although many studies showed that superficial stroke massage is a nursing intervention, which leads to relaxation, reduction of cardiac patients' pain and stress[24], reduction of pregnant women's anxiety[25], reduction of shoulder pain in CVA patients[22], there is no evidence for its effect on reduction of MS complications. Statistics show a high prevalence of fatigue and anxiety are resulted from MS. On the other hand, the efficiency and acceptability of routine treatments are controversial;

therefore, the present study aimed to investigate the effect of SSBM massage on MS patients' fatigue and anxiety to yield needed evidences concerning complementary intervention.

MATERIALS AND METHODS

This quasi-experimental before-after study was conducted in MS Association of Qazvin, Iran as the research setting. As random selection of participants wasn't possible, quasi-experimental design was used for the study. Study population comprised all 20-45 year old patients with MS referring to Qazvin MS Association. Sample size was selected as 30 subjects in study and 30 in control group with power of 80% and confidence interval of 95% ($\alpha=0.05$) as well as referring to a similar studies[5]. Total number of the subjects was considered 32 in each group with respect to possible subjects drop. The subjects were selected by purposive sampling based on inclusion criteria. Sampling was continued during 2 months to achieve the sufficient sample size for study and participants were randomly assigned to study and control groups (while one participant was assigned to study group, the next one was assigned to control group).

Inclusion criteria were being interested to attend the study, length of the disease over six months, no history of back massage in the past six month prior to the study, lack of any complication as a prohibition to administrate the intervention (not being in acute phase of the disease, no back or spinal cord injury, no pregnancy, no back wound or inflammation), and the ability of making needed communication for data collection and attending the study[5, 25]. Exclusion criteria were loss of patients' motivation to remain in study and a disturbance in patients' health due to any reasons. It should be noted that two patients were excluded due to being hospitalized during the study.

Finally, statistical analysis was conducted on 30 subjects in control group. After allocation of the groups and obtaining an informed consent from the patients, information confidentiality, subjects' voluntary participation, and the goals, stages and length of the study were explained to the subjects in both groups separately. Then, on the first day before conducting the study, fatigue severity scale and Spielberger overt anxiety scale were completed for the study and control groups. In study groups, SSBM massage was administrated in a room in MS association building with conventional conditions for massage therapy(quiet with mild light and room temperature of 27⁰C and with no environmental stimulations) for seven 10- minute sessions by the researcher and a co-researcher. Next, 24 hours after the end of intervention and at the time of patients' routine refers to MS association, fatigue severity scale and Spielbergerovert anxiety scale were completed for both groups.

Data collection tools included a demographic characteristics questionnaire, Spielbergerovert anxiety questionnaire and fatigue severity scale. Spielberger anxiety questionnaire included two sections. The first section, contained 20 questions inquiring state- trait anxiety, or the individuals' anxiety during the test, and the second, personality anxiety or anxiety as a personal characteristic [23]. In the present study, to measure subjects' overt anxiety, the first section of the questionnaire was used in such way that the subjects had to express their feelings at the moment of filling in the form. This questionnaire has 20 four- item positive negative short questions as very low, low, much and very much, which are scored 1-4 respectively. The answers are weight in such a way that point four shows the highest anxiety and one the lowest. The weights for the items showing no anxiety are inversed and are pointed inversely. They included items 1, 2, 5,8, 10, 11, 15, 16, 19, 20. Total points of overt anxiety scale range within 20-80 points[22]. Validity and reliability of overt anxiety questionnaire have been confirmed in most of the studies conducted in Iran including; Yeganehkah et al (2007), Dehghan Nayari et al (2011), and Adib Hajbagheri et al (2011), with a high reliability (82-90% of previous studies) [26-28].

Fatigue severity scale, made by a neurologist named Kruup in 1988, enjoys a high internal consistency and has a high face and structure validity. This brief questionnaire to measure level of fatigue, which includes nine items, which are scored based on the severity of the signs between 1-7 points. Point one (the lowest possible point) shows a high disagreement with the item and point seven shows a high agreement with the item. Generally, the patient pointed lower than 36 shows no fatigue and the one with equal or more than 36 has some degrees of fatigues[29]. Validity and reliability of

this scale was checked in a Persian version by Shahvaraghi in MS patients through translation and back translation in 2012 and Cronbach alpha= 0.96[30]. Test re-test and internal consistency test methods were used to calculate reliability of fatigue severity scale (Cronbach alpha) in the present study. The questionnaire was distributed among 10 MS patients to fill, and after two weeks, it was re-filled by the same individuals. The obtained correlation coefficient of test re- test ($r=0.965$) and Cronbach alpha of test re- test ($=0.83$) were obtained at an acceptable level.

Massage therapy was administrated by the researcher (after being trained by masters and when the researcher had her practical mastery approved by them). The patient sat on massage chair and bent his/ her head on a pillow. Small circular massage was conducted on patients' neck by researcher's thumb. Slow stroke back massage was administrated from neck area to sacrum by the researcher's palm and repetition of the action by her other palm on the other side of spine in a reverse direction simultaneously (toward neck). It also included slow stroke with thumb in both sides of spine from shoulder to waist and sweep stroke from neck nearly down to sacrum by two palms [23].

Data analysis was conducted by independent t- test and paired t- test through SPSS version 18. Significance level was considered $p=0.05$. Chi- square test was used to compare qualitative variables of the study.

Ethical considerations were respected through attaining a permission from University Ethics Committee, researcher's introduction to the subjects, explanation of the research stages to the patients, obtaining informed consent from participants, collection of data after obtaining MS patients' agreement and co-operation, keeping the collected data confidential, making the subjects in control group sure about conducting the intervention for them if they liked, after the end of the study, and finally, assuring the related authorities about making the results at their access.

RESULTS

In this quasi- experimental study, comparison of the groups concerning baseline and possible confounding variables showed that the groups were homogenous. The related results have been presented in table 1. It should be noted that there were 32(51.6%) subjects in study and 30(48.4%) in control group.

There were 28 (87.5%) and 22 (73.3%) female subjects in study and control groups respectively, and 21(65.6%) and 16(53.3%) were married in study and control groups respectively. About 46.9% in study and 36.7% in control group had education level of bachelor's degree. Other related results have been presented in table 1.

Table1. Comparison of demographic variables in study and control group

Variable	Study Group		Control Group		P value*	
	No	%	No	%		
Gender	Male	4	12.5	8	26.7	0.158
	Female	28	87.5	22	73.3	
Marital Status	Single	11	34.4	14	46.7	0.324
	Married	21	65.6	16	53.3	
Educational Status	Under Diploma	5	15.8	4	13.3	0.72
	Diploma	8	25	10	33.3	
	Associate	4	12.5	5	16.7	
	Bachelor	15	46.9	11	36.7	
Recurrences' of disease	No recurrence	19	59.4	12	40	0.259
	1 or 2 times a year	10	31.3	12	40	
	3 or more times a year	3	9.4	6	20	
Duration of disease (year)	<1	7	21.9	7	23.3	0.929**
	1-4	16	50	13	43.3	
	5-9	5	15.6	6	20	
	10-14	2	6.3	3	10	
	19-15	2	6.3	1	3.4	
Daily Activity (hours)	Up to 5	10	31.2	7	23.3	0.714
	10-6	16	50	18	60	
	11-15	6	18.8	5	16.7	

*Chi- square test was used to compare variables

**Fisher's exact test

Other findings of the study showed no significant difference in pre- test mean anxiety scores in study and control groups ($p=0.993$), but the posttest mean anxiety score was significantly lower in study group , compared to control ($p < 0.001$) . Posttest mean anxiety score was also lower in study group, compared to pre- test ($p < 0.001$), but posttest mean anxiety score in control group showed no significant difference with pretest ($p=0.388$) (table 2).

Table2- Comparison of Anxiety mean scores before and after intervention in both groups

Group	Before		After		P value*
	Mean	SD	Mean	SD	
Study	51.53	4.51	38.65	5.11	<0.001
Control	51.63	4.96	52.13	4.71	0.388
P value**	0.993		<0.001		
*Paired T-Test					
**Independent T-Test					

Table three shows that pretest mean fatigue severity scores showed no significant difference in study and control groups ($p=0.76$). Posttest mean fatigue severity score was significantly lower than pretest in study group($p < 0.001$), but there was a significant difference in pretest and posttest fatigue mean scores in control group($P < 0.001$) in such way that posttest fatigue mean score was more than pretest in this group.

Table3- Comparison of Fatigue mean scores before and after intervention in both groups

Group	Before		After		P value*
	Mean	SD	Mean	SD	
Study	48.31	6.94	33.12	7.16	<0.001
Control	48.86	7.25	53.20	7.52	<0.001
P value**	0.760		<0.001		
*Paired T-Test					
**Independent T-Test					

DISCUSSION

The obtained results showed that mean anxiety and fatigue scores decreased after SSBM massage in study group, but they showed no change in control group. The observed differences in overt anxiety and fatigue in two groups after intervention cannot be rooted from subjects' baseline differences as the subjects were randomly assigned to study and control, and they were statistically homogenous concerning demographic characteristics. In addition, overt anxiety showed no significant difference in two groups before intervention. Therefore, it can be concluded that SSBM massage was effective on reduction of fatigue and anxiety in MS patients.

The findings of the present study were consistent with previous studies. Mackereth et al(2007), in a quasi- experimental study reported that anxiety reduced more in study group of reflexology and progressive muscle relaxation compared to control[31]. In a quasi- experimental study on the effect of aromatherapy massage on MS patients' fatigue, Bahreini et al (2011) showed that effleurage massage significantly improved MS patients' fatigue[5]. Jouzi et al (2009) showed that massage reduced stroke patients' anxiety. But they didn't find significant difference in patients' anxiety scores of intervention and control group. The observed reduction of anxiety in their control group might be resulted from the chronic nature of stroke and patients' adaptation and their familiarization with other stroke patients[32]. Holand and Pokorny showed that SSBM massage, conducted for three minutes and for three straight days, reduced patients' mean blood pressure, pulse and level of anxiety and led to more patients- nurse attachment[33].

Experts explain efficiency of massage therapy in reduction of anxiety through Selye theory. This theory states that one of the physiologic duties of hypothalamus is making an increase or a decrease in nervous system stimulation. Anxiety stimulates hypothalamus and sympathetic system through

increasing muscular tonicity, and massage therapy suppresses anxiety reactions through reduction of muscular pressure and leads to relaxation[34].

The findings of the present study showed that slow stroke back massage results in a significant recovery of MS patients' fatigue, which consequently, affects their quality of life. Most of MS patients and their families have inadequate information about the disease and its complications control (fatigue and anxiety). Clients' education concerning the complications of fatigue and administration of simple and accessible interventions such as SSBM are effective in prevention and management of anxiety and fatigue as a complication free and cost effective method at home, and lead to improvement of the patient' quality of life.

SSBM massage is a convenient, non- invasive and cost effective method, which can be easily taught and results in patients' and their families' empowerment in control of MS and reduction of fatigue and anxiety. This leads to fewer patients' referrals to hospital and clients' and their families lower financial and spiritual burden. Personal differences and psychological conditions of the subjects in response to the level of interventions effect and the impact of environmental and cultural factors on patients' perception from massage therapy can be mentioned as the limitations of the present study.

Conclusion:

With regard to the findings, education and recommendation of SSBM massage to health providing staff can be an efficient step toward prevention and control of fatigue, and consequently, improvement of MS patients' anxiety. Family education of SSBM massage is applicable and leads to constant process of home treatment and rehabilitation, and promotion of accessibility and acceptance of this rehabilitative and care intervention.

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